

## ABSTRACT

The invention provides a method of reversibly producing a source of hydrogen gas comprising mixing together a plurality of hydrogen-containing starting materials; and then heating the mixed materials at a temperature sufficient to release hydrogen. Upon release of hydrogen, there is formed a residue which comprises at least one material different from the starting materials. There is also synergy whereby it is possible to regenerate at least one of the hydrogen-containing starting materials by exposing hydrogen gas to the aforesaid residue.